

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of: Yoshihiro SASAKI et al.

Appl. No.: NEW Group:

Filed: February 13, 2002 Examiner:

For: VISUAL INSPECTION METHOD AND VISUAL
INSPECTION APPARATUS

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, DC 20231

February 13, 2002

Sir:

The following preliminary amendments and remarks are respectfully submitted in connection with the above-identified application.

IN THE ABSTRACT OF THE DISCLOSURE:

Please replace the Abstract of the Disclosure with the rewritten Abstract of the Disclosure attached on a separate sheet attached hereto.

REMARKS

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



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BC/ma
Attachments

VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE ABSTRACT OF THE DISCLOSURE:

The Abstract of the Disclosure has been amended as follows:

Abstract of the Disclosure

In a visual inspection method and ~~a visual inspection~~ apparatus, a picture processing unit converts an original picture, ~~which is~~ obtained by taking a photograph of a BGA illuminated by a ring illuminator from above, ~~by~~ using a camera, and labels a binary picture obtained by this binary conversion. Then, it forms ~~a~~ ~~circumscribing~~ rectangle circumscribing an outer circumference of a labeling picture obtained by the labeling, and inverts a labeling picture within the formed circumscribing rectangle, and removes a portion of a region formed by the outer circumference and the circumscribing rectangle in a picture obtained by the inversion, and then generates an inspection picture by adding a picture obtained by the removal to the labeling picture, and accordingly judges a pass or rejection of the inspection target sample based on the generated inspection picture. Thus, the ~~appearance~~ inspection can be carried out at a high accuracy irrespectively of a low cost.

Abstract of the Disclosure

In a visual inspection method and apparatus, a picture processing unit converts an original picture, obtained by taking a photograph of a BGA illuminated by a ring illuminator from above, using a camera, and labels a binary picture obtained by this binary conversion. Then, it forms a rectangle circumscribing an outer circumference of a labeling picture obtained by the labeling, and inverts a labeling picture within the formed circumscribing rectangle, and removes a portion of a region formed by the outer circumference and the circumscribing rectangle in a picture obtained by the inversion, and then generates an inspection picture by adding a picture obtained by the removal to the labeling picture, and accordingly judges a pass or rejection of the inspection target sample based on the generated inspection picture. Thus, the inspection can be carried out at high accuracy irrespectively of a low cost.

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